



# BLACK FLIES

## put the 'pest' in pestilence

### If you want to know more

There is an excellent reference publication by B.V. Peterson and B.C. Kondratieff published in 1994 on the black flies of Colorado. It summarized what was known at that time about 32 species of black flies that had been collected and identified by experts in that state. Wyoming probably has many of those same black fly species.

*Scott Schell*

Those who have never had the misfortune to experience swarms of black flies around their faces and suffer the itchy, bloody, serum weeping sores from their bites should consider themselves lucky.

Being a Wyoming native, my first bad experience with a black fly species that likes to bite people was on the maneuver area at Fort Drum, New York. This was where the battalion of Army National Guard I belonged to spent three days feeding our blood to black flies during the day and to mosquitoes at night before we were issued head nets and insect repellent.

There are species of black flies in most regions of North America that don't hesitate to feed on humans. Fort Drum is one of those regions as are parts of Wyoming! Black flies use their sharp mandibles to cut open thin skin to get to shallow capillaries and apply their saliva, which contain compounds that inhibit blood coagulation and dilate the severed blood vessels.

It has been documented that large quantities of the saliva of black fly can cause simuliotoxicosis and kill large numbers of domestic and wild birds and domestic livestock.

### Not All Black Flies Black

Black fly is the common name for members of the family *Simuliidae* in the insect order *Diptera*, the true flies. Not all black flies species are black. In Wyoming, most of the species are gray and one important pest of livestock, *Simulium bivittatum*, is yellow. "Buffalo gnat" is a very descriptive common name often applied regarding their body shape because all black fly species have a humpbacked thorax.

The muscles that power the wings are in the thorax. The large flight muscles allow female black flies



*Not all black flies are black, but they all have a large humped thorax profile and are capable of flying long distances to find a blood meal. This pale yellow species is Simulium bivittatum, a known pest of livestock in the Big Horn Basin.*

Jessica Fink photo, Big Horn County Extension



Scott Schell photo



Scott Schell photo

*So intent on getting a blood meal from the shallow blood vessels under the skin of the inner ear on this horse, two *Simulium vittatum* completely ignore the author's thumb. If the insides of a horse's ears are already wounded by the flies, only apply a labeled fly repellent wound ointment to the injured area. Applications of home remedies such as used motor oil or pine tar to the ear risk compounding the problem as it soon mixes with corral dust to form a greasy sludge, which can accumulate in and eventually plug the horse's ear canal.*

*These black flies have just landed on the ear but are being repelled by the non-greasy insect repellent present all over the hair of the outer ear. Horses will shake their heads to try and dislodge them from ears or violently swish their tails between their legs to protect their udder or sheath from these tiny pests. This horse would retreat to the dark barn in the background to avoid black fly attacks if no repellent had been applied.*

to range for miles away from their larval habitat to find blood meals for the nutrition needed to develop their eggs. This long-distance flight capability is remarkable considering their small size, with most species less than 1/8 inch from head to tail.

Flowing water is the larval habitat of black flies. This is the opposite of mosquito larval habitat, which require still water. The larvae of black flies are filter feeders. They depend on the water current to bring tiny food particles to be strained by fan-like appendages on their heads and directed into their mouths. Black fly larvae never need to surface for air, unlike mosquito larvae.

Some species have adapted to using irrigation canals and ditches. After completing larval development, black flies pupate under water to change from the legless, wingless larval form into the winged adult.

Some black fly species have only one generation per year. The major pest species have multiple generations through the spring and summer and can become very abundant and vexing.

### **Their Preferred Victims**

There is a lot of variation of preferred "blood donors" among black fly species that have known natural histories. For example, some species only feed on reptiles and amphibians, some only on birds, while others prefer only mammals.

Although some Wyoming black fly species will swarm around your head, as they can see our movement and detect our breath, the final scent cue they are looking for, that we would provide suitable blood, is missing from most people.

While humans in Wyoming are mostly ignored by black flies, our poultry, livestock, and wildlife are



Scott Schell photo

*A gray body with black markings is a very common black fly color pattern. This is a member of the *Simulium vittatum* species complex. This genus are known to be severe pests of livestock and poultry as their populations build through the spring and summer. The author has collected them off his horses as early as late March on warm days and as late as mid-September in the Laramie vicinity.*



*Horses can be reluctant to have repellent applied to their ears until they associate the application with the relief it brings from the pests. The author applies insect repellent to a protective glove and gently hand applies it to the hair coat of the front and backside (the flies will land anywhere they can on the ear and walk to the inside) of the ear. Later, cover the horse's eye with the gloved hand, to protect it from overspray, and spray the ear as normally done according to the label of the chosen repellent product.*

not so lucky. Bird-feeding black fly species have a major impact on the behavior and nesting success of songbirds, waterfowl, and raptors.

Domestic turkeys and chickens will return to a dark coop in the daytime to seek refuge from a black fly attack. Most black fly species will not enter a dark shelter (barn or coop) after the animals. Species adapted to feeding on cavity nesting birds are the exception. I observed this behavior personally with black flies swarming in front of and entering a tree swallow nest box. The nestlings in that box all died, either of blood loss or possibly a disease such as Leucocytozoonosis that is vectored by black flies.

One study published in a research

journal on red-tailed hawk nestlings in Grand Teton National Park attributed all of the chick mortality observed, 14 percent, to black fly feeding resulting in blood loss, infection, disease, and stress.

### **How to Fight Back**

What can you do to protect livestock and poultry from black fly attacks?

Because black fly larval habitat can't be eliminated or economically treated to kill the insects to protect domestic animals, the best option is to use deep shade shelters and/or repellents to protect them.

Most beef cattle in Wyoming are protected from blood feeding arthropods as a standard husbandry

practice with insecticide-emitting ear tags. Fortunately, black fly species appear to be sensitive to and repelled by the commonly used active ingredients in these tags.

Dairy animals (goats and cows) have udders, which are especially susceptible to black fly attack. During black fly seasons, having an area of deep shade they can retreat into can help them. Black flies already on animals won't leave the host when they enter into deep shade, but black flies still seeking hosts won't enter the shade to bite. Poultry coops, that you may want to have plenty of light in during other times of the year, should be dark during the day during black fly season.

When not being ridden during the day, horses and mules can also take shelter in a dark barn to escape black fly torment. A black fly's favorite target is the inner surface of equine ears.

Because black flies are small and their bites are initially painless, horses might not show much reaction to a fly attack. However, the irritation and pain develops at the bite sites after the fly's anesthetic wears off. If you have ever had a black fly bite, try to avoid touching it as it heals. If you touch it, it will become itchy, and scratching only makes it worse.

A horse's ears have to be handled when bridling. If their ears are raw and irritated from black fly bites, they can become "ear shy." Labeled insect repellents applied to the ears, midline, and groin of the riding animals can protect them from attack and keep their minds on their riders and jobs.

Physical protection of the ears with ear bug nets is an option when deep shade or repellents are not available.

**Scott Schell** has been a grocery store for black flies and doesn't want you to have that experience. He is the University of Wyoming Extension assistant entomologist and can be reached at (307) 766-2508 or at [sschell@uwyo.edu](mailto:sschell@uwyo.edu).